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(11)

EP 0 999 030 A3

(12)

## EUROPEAN PATENT APPLICATION

(88) Date of publication A3:

23.01.2002 Bulletin 2002/04

(51) Int Cl.7: B29C 47/00

(43) Date of publication A2:

10.05.2000 Bulletin 2000/19

(21) Application number: 99121049.3

(22) Date of filing: 21.10.1999

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU  
MC NL PT SE

Designated Extension States:

AL LT LV MK RO SI

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(30) Priority: 23.10.1998 SE 9803646

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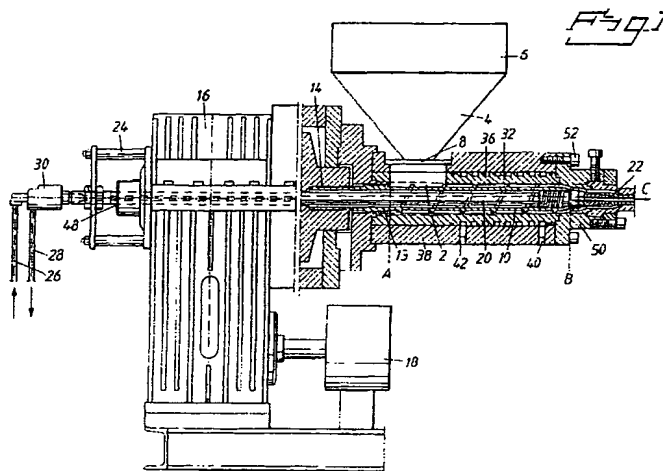
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(54) **An apparatus and a method for the extrusion of mouldings from a cross-linkable polymer material**

(57) The present invention relates to apparatus for extruding mouldings from cross-linkable polymer material. The apparatus includes a first part to which the polymer material is delivered from a material container, and a second part which forms a moulding tool for moulding and cross-linking said article. The first part of the apparatus includes a feed zone (2) that has an inlet (8), a

generally tubular outlet (7) and a rotatable feed screw (10) that functions to compress and feed the polymer material in a unmelted or solid state from said inlet (8) to said outlet (7), wherein the length of the feed screw (10) does not exceed the length of the feed zone (2).

The invention also relates to a method of extruding articles from cross-linkable polymer material in an extruder.





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# EUROPEAN SEARCH REPORT

Application Number  
EP 99 12 1049

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 3 891 372 A (TAKIURA MAMORU) 24 June 1975 (1975-06-24)	1,2,4	B29C47/00
A	* column 1, line 11 - column 6, line 22; figures 1,2 *	18	
X	PATENT ABSTRACTS OF JAPAN vol. 012, no. 183 (M-703), 28 May 1988 (1988-05-28) & JP 62 294529 A (MITSUI TOATSU CHEM INC), 22 December 1987 (1987-12-22) * abstract *	1-3,8	
X	US 4 595 546 A (WHEELER JR JOHN R) 17 June 1986 (1986-06-17)	1,2,4	
Y	* column 2, line 24 - column 5, line 2; figure 1 *	8	
Y	EP 0 596 835 A (ILLINOIS TECHNOLOGY INST) 11 May 1994 (1994-05-11) * column 4, line 14 - column 11, line 10; figure 1 *	8	B29C
A	US 4 013 276 A (BOHAM AMBROSE C ET AL) 22 March 1977 (1977-03-22) * column 2, line 1 - line 35; figure 1 *	1,9	
A	WO 97 10940 A (JAERVENKYLAE JYRI ;LAHTINEN TERHO (FI); UPONOR BV (NL); SJOEBERG M) 27 March 1997 (1997-03-27) * the whole document *	1,15-17	
The present search report has been drawn up for all claims			
Place of search <b>MUNICH</b>		Date of completion of the search <b>28 November 2001</b>	Examiner <b>Lanz, P</b>
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons &amp; : member of the same patent family, corresponding document</p>			

EPO FORM 1503 03.02 (P-X-C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 12 1049

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The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-11-2001

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3891372	A	24-06-1975	JP 52025424 B	07-07-1977
			JP 54020541 B	24-07-1979
			DE 2162329 A1	13-07-1972
			FR 2118782 A5	28-07-1972
JP 62294529	A	22-12-1987	NONE	
US 4595546	A	17-06-1986	EP 0234074 A1	02-09-1987
EP 0596835	A	11-05-1994	US 5397065 A	14-03-1995
			US 5395055 A	07-03-1995
			AT 156410 T	15-08-1997
			CA 2102257 A1	04-05-1994
			DE 69312861 D1	11-09-1997
			DE 69312861 T2	12-02-1998
			EP 0596835 A1	11-05-1994
			JP 7001450 A	06-01-1995
			US 5415354 A	16-05-1995
US 4013276	A	22-03-1977	GB 1507826 A	19-04-1978
			AU 497921 B2	25-01-1979
			AU 7995175 A	14-10-1976
			DE 2514307 A1	06-11-1975
			FR 2267196 A1	07-11-1975
			IT 1032444 B	30-05-1979
			JP 50139159 A	06-11-1975
WO 9710940	A	27-03-1997	AU 1797797 A	10-09-1997
			AU 718776 B2	20-04-2000
			AU 6417496 A	09-04-1997
			AU 6990396 A	09-04-1997
			AU 7005696 A	09-04-1997
			BG 102303 A	26-02-1999
			BR 9610535 A	21-12-1999
			BR 9610557 A	21-12-1999
			CA 2231860 A1	27-03-1997
			CA 2232376 A1	27-03-1997
			CA 2247243 A1	28-08-1997
			CN 1196696 A , B	21-10-1998
			CN 1202128 A	16-12-1998
			CN 1291934 A	18-04-2001
			EE 9800074 A	15-10-1998
			EP 0851805 A1	08-07-1998
			EP 0971812 A1	19-01-2000
			EP 0921921 A2	16-06-1999
			EP 0883479 A1	16-12-1998

EPO FORM P469

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 12 1049

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-11-2001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9710940 A		FI 965182 A	05-10-1997
		WO 9710940 A1	27-03-1997
		WO 9730833 A1	28-08-1997
		HR 960299 A1	31-10-1997
		HU 9900771 A2	28-07-1999
		JP 11513326 T	16-11-1999
		JP 11512356 T	26-10-1999
		JP 11512357 T	26-10-1999
		JP 2000505372 T	09-05-2000
		NO 981215 A	19-05-1998
		PL 328306 A1	18-01-1999
		WO 9710936 A2	27-03-1997
		SK 28498 A3	04-11-1998
		TR 9800522 T2	21-08-1998
		US 6106761 A	22-08-2000
		US 6053214 A	25-04-2000
		AT 199675 T	15-03-2001
		AT 203589 T	15-08-2001
		AU 706505 B2	17-06-1999
		AU 5650796 A	30-01-1997
		AU 704944 B2	06-05-1999
		AU 6128596 A	30-01-1997
		AU 704144 B2	15-04-1999
		AU 6196098 A	11-06-1998
		CA 2225402 A1	16-01-1997
		CA 2225419 A1	16-01-1997
		CA 2229842 A1	27-03-1997
		CA 2233027 A1	16-01-1997
		CA 2233030 A1	16-01-1997

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82